CLAIMS

We claim:

1. Insulating and weather resistant materials comprising thermally resistant foamed polyester resin to which has been directly applied hot melt sealant in the spreadable molten state at temperatures in the range of about 130 °C to about 260 °C wherein said polyester comprises a thermally resisting amount of branching agent and wherein said application of hot melt sealant is made substantially in the absence of degradation of the foamed polyester resin.

2. The insulating materials of Claim 1 wherein the branching agent is deployed in the range of about 0.2 wt % to about 1.0 wt % based on weight of the polyester foam.

3. The insulating materials of Claim 2 wherein the amount of unreacted branching agent remaining in the polyester foam product is less than about 100 ppm.

4. The insulating materials of Claim 1 wherein the foamed polyester resin is fabricated from polyester, a blowing agent, concentrate (A) and, optionally concentrate (B), wherein concentrate (A) comprises polyester and about 0.2 wt % to about 15 wt % branching agent and wherein concentrate (B) comprises polyester and about 0.1 wt % to about 10 wt % nucleating agent.

5. The foamed polyester resin of Claim 4 wherein the polyester is deployed in the range of about 85 wt % to about 99.8 wt % of the product foam, the blowing agent is deployed in the range of about 1 wt % to about 15 wt % of the feed, concentrate (A) is deployed in the range of about 0.2 wt % to about 10 wt % of the product foam, and concentrate (B) is deployed in the range of 0 to about 6.7 wt % of the product foam.

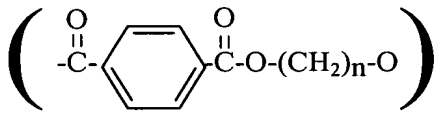
6. The insulating materials of Claim 4 wherein the nucleating agent is sodium carbonate.

7. The insulating materials of Claim 1 wherein the branching agent is selected from the group consisting of trimellitic anhydride, non-aromatic anhydrides having at least two anhydride functional groups, aromatic anhydrides having at least two anhydride functional groups and mixtures thereof.

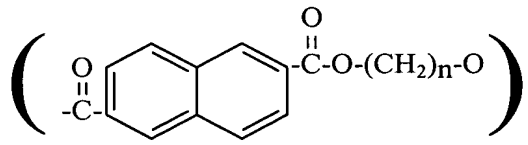
8. The insulating materials of Claim 1 wherein the branching agent is pyromellitic dianhydride.

9. The insulating materials of Claim 1 wherein the polyester comprises repeating units selected from the group consisting of those encompassed by Formula I and Formula II and wherein n in each of Formulas I and II has a value in the range of 2 - 4.

Formula I



Formula II



10. The insulating materials of Claim 1 wherein the hot melt sealant comprises a member selected from the group consisting of asphalt, tar and pitch.

11. The insulating materials of Claim 1 wherein the foamed polyester resin optionally also comprises typical additives selected from the group consisting of fire retardants, flame retardants, nucleating agents, antioxidants, colorants, stabilizers, fillers, and mixtures thereof.

12. The insulating materials of Claim 1 wherein the hot melt sealant optionally also comprises typical additives selected from the group consisting of fire retardants, flame retardants, antioxidants, colorants, stabilizers, fillers, and mixtures thereof.

13. The insulating materials of Claim 1 wherein the polyester optionally comprises scrap polyester and wherein said scrap polyester optionally further comprises agents and additives previously formulated therein.

14. The insulating materials of Claim 1 comprising foam panels that optionally comprise special features on their sides to improve interconnecting with adjacent panels in forming a foam layer.

15. A method of producing a weather resistant and insulating roof comprising the steps of:

(a) attaching a layer of a foamed polyester resin of Claim 1 to an unimproved roof surface by suitable attachment means;

(b) applying a layer of hot melt sealant in the molten state at temperatures in the range of about 130 °C to about 260 °C directly to the exposed surface of said foam layer substantially in the absence of degradation of the foamed polyester resin;

(c) optionally applying a layer of roofing felt to the unsolidified hot melt sealant layer;

(d) optionally applying additional alternating layers of hot melt sealant and roofing felt, preferably ending with a layer of hot melt sealant; and

(e) solidifying the sealant layer and optional additional sealant layers by permitting the sealant to cool forming a weather resistant, insulated sealed roof.

16. The method of Claim 15 wherein the means for attaching the foam layer to the unimproved roof surface is selected from the group consisting of mechanical fasteners and adhesives.

17. The method of Claim 15 wherein the polyester foam layer is formed from a plurality of foam panels.

18. The method of Claim 17 wherein the foam panels optionally comprise special features on their edges to improve interconnecting with adjacent panels in forming the foam layer.

19. The method of Claim 17 wherein the foam panels are further optionally mechanically or adhesively attached to adjacent panels in order to make the foam layer more monolithic.

20. The method of Claim 17 wherein at least one surface of the foam panels is optionally treated by means selected from the group consisting of chemical treatment, thermal treatment, physical treatment, irradiation, and combinations thereof in order to improve the characteristics of the foam layer.

21. The method of Claim 15 wherein weather resistant particles are optionally applied as a finish on the final optional exposed layer of the hot melt sealant.

22. A laminar composite comprising:

(a) layer (a) having a top and bottom side comprising the insulating material of Claim 1 having foamed resin as the bottom side and hot melt sealant as the top side;

(b) layer (b) comprising roofing felt immediately adjacent to the top side of layer (a) and attached to layer (a) as a result of its placement thereon prior to setting of the hot melt sealant;

(c) optional additional alternating layers of hot melt sealant and roofing felt in the order recited atop layer (b) ending with a top final layer of hot melt sealant; and

(d) an optional finish layer of weather resistant particles applied atop the final layer of hot melt sealant.